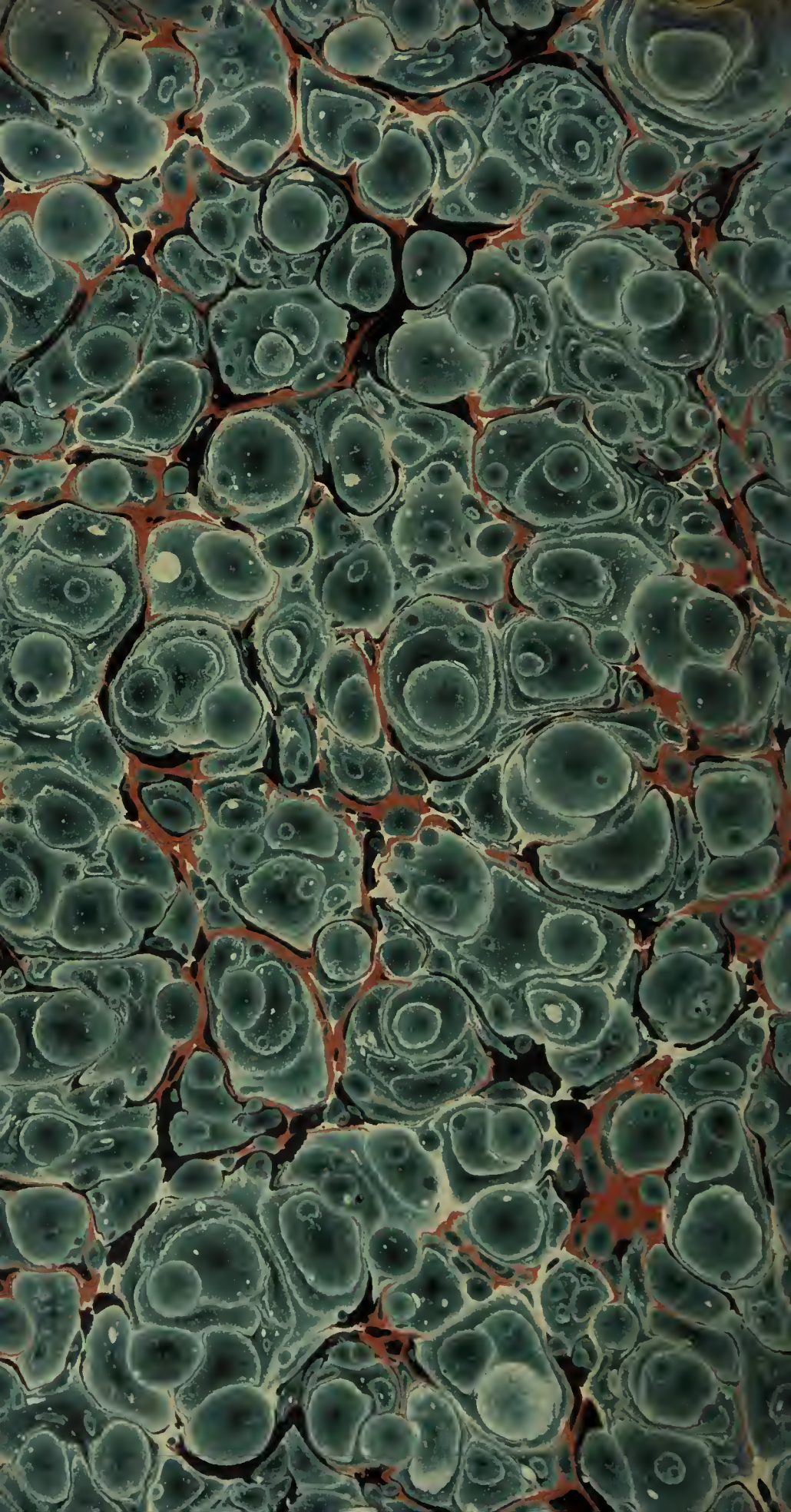

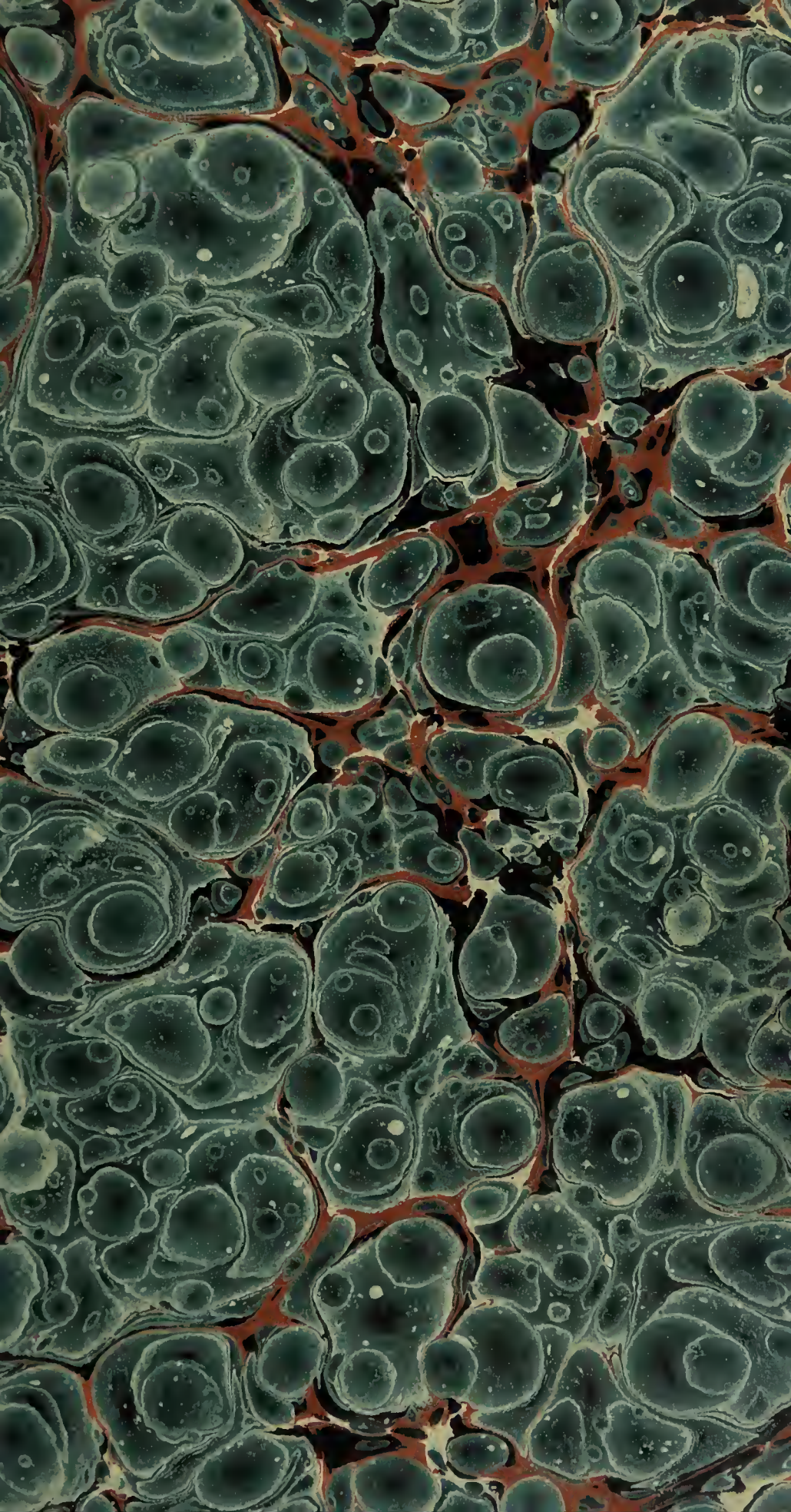

THE

NATURAL HISTORY

OF

BRITISH INSECTS;

EXPLAINING THEM

IN THEIR SEVERAL STATES,

WITH THE PERIODS OF THEIR TRANSFORMATIONS, THEIR FOOD, ŒCONOMY, &c.

TOGETHER WITH THE

HISTORY OF SUCH MINUTE INSECTS

AS REQUIRE INVESTIGATION BY THE MICROSCOPE.

THE WHOLE ILLUSTRATED BY

COLOURED FIGURES,

DESIGNED AND EXECUTED FROM LIVING SPECIMENS.

By E. DONOVAN.

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MDCCXCII.

A

SLIGHT SKETCH

OF THE

ANIMAL SYSTEM,

LINNÆUS divided the Animal Syſtem into ſix claſſes.

Claſs I. MAMMALIA. Suckle their young.
II. AVES. (Birds) covered with feathers.
III. AMPHIBIA. Lungs arbitrary.
IV. PISCES. (Fiſhes) breath by gills not arbitrarily.
V. INSECTA. (Inſects) two antennæ, or feelers *.
VI. VERMES. No head.

Inſects therefore compoſe the fifth Claſs in the Syſtem, and are divided into ſeven Orders.

Order I. COLEOPTERA. Wings two, covered by two ſhells divided by a longitudinal ſuture.
II. HEMIPTERA. Shells or covers of the wings, ſomewhat ſoft, and incumbent on each other.
III. LEPIDOPTERA. Wings four, imbricated with minute ſcales.

* Thoſe feelers are the two horns that are affixed to the head.

IV. NEUROPTERA. Wings four, naked, tranſparent, reticulated, with veins or nerves. Tail without ſting.

V. HYMENOPTERA. Wings four. Membranceous. Tail of the female armed with a ſting.

VI. DIPTERA. Wings two.

VII. APTERA. No wings.

TRANSFORMATIONS OF INSECTS.

Many of our readers are no doubt acquainted with the ſingular transformations Inſects undergo, but we truſt thoſe will pardon a digreſſion which may be uſeful to thoſe who have not that knowledge; and without premiſing farther we proceed to inform them, that Inſects in general undergo a material change in their form at ſtated periods of their lives; there are ſome, though few, which burſt forth from the egg perfectly formed, as *Spiders*, &c. but the greater part exiſt in four ſeveral ſtates: the firſt that of the egg, whence the Larva, or Caterpillar is produced; it is at firſt very minute, but in this ſtate it feeds, ſome kinds on one or two plants only, others promiſcuouſly on many, they therefore continue to increaſe in ſize, moulting ſeveral times the outer ſkin, until the deſtined period of their dormant ſtate approaches; they then ſpin a web more or leſs ſtrong according to the ſpecies, and are converted into the aurelia, or chryſalis; and laſtly they burſt forth in due ſeaſon perfectly formed. It is under this form they propagate a future race, and themſelves periſh, as they rarely ſurvive the inclemencies of the winter.

The antient naturaliſts held ſuppoſitions very imperfect and erroneous relative to thoſe transformations, but *Malpighi* and *Swammerdam* proved by many accurate examinations clearly, that thoſe changes were not ſuddenly effected, but gradual; and that under the form of the Caterpillar they could diſtinguiſh the future changes the Inſect would undergo.

PLATE I.

PLATE I.

PHALÆNA PAVONIA,

Emperor Moth.

Lepidoptera.

Inſects of the Lepidoptera Order are divided into three *Genera*, Papilio, Sphinx, and Phalæna, *Butterflies*, *Hawk Moths*, and *Moths*. The characters of the two former hereafter: thoſe of the Phalæna are

GENERIC CHARACTER.

The antennæ ſetaceous, decreaſing in ſize from the baſe to the apex. The wings, when at reſt, are generally contracted. They fly in the night.

SPECIFIC CHARACTER.

Antennæ feathered. No trunk. Wings expanded, horizontal, rounded, entire, with a large eye in the center of each; the firſt red-brown waved; the ſecond orange. The antennæ of the male are broader, and the wings of the female larger, waved with black and white and bordered with yellow. Caterpillar green or yellow, ſpinous, on thorns and brambles. Length of the moth one inch.—*Berken. Out.*

The conformity and likeneſs which prevails between the male and female throughout the greater part of the animal ſyſtem, cannot however in Inſects be implicitly depended on; the difference in many is ſuch as even to miſlead ſome very accurate Entomologiſts, the illuſtrious Linnæus not excepted. In this ſpecies it is not ſo great as

in many, but ſuch as entitles the female to a figure in a future plate: Our figure is of the male.

Albin, (*Plate* 25, *Subject* 37,) has given a figure of the male and female on the ſame plate, and deſcribes a male to have changed to the aurelia ſtate . . in our plate repreſented *July* 16, and *March* 18 following to have produced the Fly. But the time of their appearance depends on the proportion of heat or cold; as the author's ſubject was preſerved from the ſeverity of winter, in a warm room. The uſual time to find them in the caterpillar ſtate is Auguſt, and in April the Fly.

The ſingular proviſion which nature makes for the protection of this Fly deſerves particular notice; when the time of its continuation in the caterpillar ſtate is expired, by much labour it forms a kind of bag or purſe, of a very tough ſubſtance; this it fixes againſt the trunks of trees, &c. by a number of hairs or filaments, which remain on the external ſurface. It lines the outer caſe by one of a finer texture, the top of which is cloſed by ſeveral briſtles that unite in the center, exactly repreſenting a cap, and excludes almoſt the poſſibility of its receiving an injury during this defenceleſs ſtate. In this bag it paſſes to the aurelia, and remains until the birth of the perfect inſect.—Our figure repreſents the chryſalis or aurelia in the bag; part appears torn away to exhibit its ſituation therein.

Were we to unite the ſeveral accounts of authors reſpecting its food, it would appear to be a general feeder; it will live on the roſe, the elm, and the willow; and on thorns and brambles particularly.

PLATE


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PLATE II.

FIG. I.

MONOCULUS QUADRICORNIS.

APTERA.

[illegible]

GENERIC CHARACTER.

[illegible]

SPECIFIC CHARACTER.

[illegible]

[illegible]

PLATE II.

FIG. I.

MONOCULUS QUARICORNIS.

APTERA.

Apterous inſects are diſtinguiſhed chiefly by having no wings in either male or female.

GENERIC CHARACTER.

The feet are formed for ſwimming. The body is covered with a cruſtaceous caſe or ſhell. The eyes fixed in the ſhell very near each other.

SPECIFIC CHARACTER.

Grey brown. One eye. Antennæ four. Body diminiſhes towards the tail, which is long and bifid, with three or four ſtrong hairs on each ſide. A bag of eggs on each ſide of the tail. Length half a line.—*Berk. Out.*

Although this inſect may have been noticed by many, ſwimming, or rather darting ſwiftly in various directions in water; its minuteneſs is ſuch, that the moſt attentive could never have comprehended preciſely its component parts; but the microſcope diſcovers it to be an animal of ſuch ſingular formation as highly to deſerve the attention of the naturaliſt. It is covered by a firm cruſtaceous ſubſtance, divided into annulations, and armed in ſeveral parts with ſpines and briſtles; not-

 withſtanding

notwithſtanding which, this ſhell is ſo tranſparent that the whole motion of the inteſtines is very viſible by a good magnifier.

It muſt be granted that, but for the microſcope, the wonders of the minute creation, would be to us entirely unknown; our ideas could never ſuppoſe the exiſtence of thoſe animated forms which occupy the immeaſurable ſpace between an apparent atom and nothing. The myriads of animals, thouſands of times ſmaller than a mite, muſt evade our cognizance, and be an actual conviction of their non-exiſtence.

But with all the utility that the microſcope can boaſt, no inſtrument is ſo likely to miſlead the moſt accurate obſerver, particularly if not in the habit of uſing it; the variations of light, the difference of the magnifying powers, or the damage the glaſſes may meet with by accident, ſuch as requires every one to examine with the greateſt care; one degree of light may bring an object to view, whilſt another may entirely blend it with the fluid it exiſts in; or one glaſs may diſcover ſpines on an object, another glaſs might have repreſented perfectly ſmooth; it is therefore neceſſary to begin with a ſmall power, in proportion to the ſize of the object, and to proceed to deeper magnifiers after.

There is ſome difference in our figure, and thoſe either of *Barbut*, or of *Baker*, which appears chiefly from our uſing a ſingle lens nearly of the deepeſt power convenient to uſe. Our glaſſes were the 20th and 30th of an inch focus.

We very attentively examined the eyes, and found, not one, but two, placed near each other, on a ſcale or plate of a black colour; hence ariſes the appearance of a ſingle eye by a ſmall magnifying power.

The tail preſents a forked appearance by a deep power, and the eggs are contained in two bags, one on each ſide the tail. The colour varies probably in proportion to the nature of its food, to pale green, more or leſs of a red, or of a grey brown colour.

FIG.

FIG. II.

This minute animalcula is frequent in ſtagnant water, or in infuſions of vegetables, and is one ſpecies of thoſe whoſe exiſtence can only be diſcovered by a good microſcope. It is very difficult, conſidering the power thoſe creatures have to diſtort their true form at pleaſure, to fix their diſtinguiſhing character: therefore where the definition appears dubious, we prefer being ſilent rather than hazard an error.

FIG. 2. Repreſents them (*magnified*) as they ſometimes ſeem to follow the leader in herds; but perhaps it is only the ſcent of the prey that induces each to follow the foremoſt, as they frequently ſwim or whirl in the water ſeparately, with great ſwiftneſs, devouring the ſmaller kinds of animalculæ.

FIG. 3. Two, magnified by a deep power, when they appear to have feet or fins.

FIG. 4. Shews the ſtrange form it aſſumes whilſt depoſiting its eggs.

FIG. 5. The eggs deeper magnified.

PLATE III.

PHALÆNA BUCEPHALA.

BUFF-TIP MOTH.

LEPIDOPTERA.

GENERIC CHARACTER.

[illegible] Fly by night. [illegible]

SPECIFIC CHARACTER.

[illegible]

[illegible]

[illegible]

[illegible]

PLATE III.

PHALÆNA BUCEPHALA,

BUFF-TIP MOTH.

LEPIDOPTERA.

GENERIC CHARACTER.

Antennæ taper from the baſe to the apex, and are ſetaceous. Wings in general deflected when at reſt. Fly by night. No Trunk. Wings reverſed, i. e. firſt Wings horizontal and ſecond erect.

SPECIFIC CHARACTER.

Antennæ feathered. Firſt Wings grey, with two double tranſverſe brown waves, and a large yellowiſh brown ſpot at the extreme angle. Second Wings plain, light yellow, length ſcarce one inch. Caterpillar hairy, yellow with black ſpots. On Oaks, Aſh, &c.—*Berkenhout.*

The delicate aſſemblage of beautiful down which cloath the upper wings of the Buff-tip Moth is its chief recommendation; the hiſtory affords but little for obſervation, it is hatched from the egg in *Auguſt*, and in *June* following the Fly is perfect.

Its beauty preſerves it not from the race of birds who purſue it from neceſſity, or from an innate deſire of cruelty and devaſtation, and

whilſt

whilſt happy in its apparent ſecurity, ranging the plain to experience the pleaſures of liberty, or to banquet in the nectareous profuſion of the vegetable kingdom, he becomes a dupe to his happineſs, his pleaſures at once fully, and he falls an unreſiſting victim into the devouring jaws of death.

PLATE IV.

PHALÆNA GROSSULARIATA.

Magpie, or Currant-Moth.

Generic Character.

The antennæ setaceous, decreasing in size from the base to the point. The Wings, when at rest, generally deflected. Fly by night.

Antennæ fine, like briftles.

Specific Character.

Antennæ and Legs black. Body yellow, with black spots. Wings white, with many black patches, and a transverse yellow band across the fore pair. Caterpillar white, with black spots on the back, belly yellow. Berk. Cat.

The Magpie-Moth is one of the commonest and most destructive on Gooseberry and Currant-trees, as its name indicates. The Caterpillar is found in May, and in July the Fly.

The Caterpillar, previous to its change to the Chrysalis state, spins a web of a very slight and delicate texture, by which it is suspended horizontally amid the branches of trees, &c. as in the Plate represented.

PLATE IV.

PHALÆNA GROSSULARIATA.

Magpye, or Currant-Moth.

Generic Character.

The antennæ ſetaceous, decreaſing in ſize from the baſe to the point. The Wings, when at reſt, generally deflected. Fly by night.

Antennæ taper, like briſtles.

Specific Character.

Antennæ and Legs black. Body yellow, with black ſpots. Wings white, with many black patches, and a tranſverſe yellow wave on the firſt pair. Caterpillar white, with black ſpots on the Back; Belly yellow. *Berk. Out.*

The Magpye-Moth is one of the *geometræ*; and feeds on Gooſberry and Currant-buſhes, as it's name indicates. The Caterpillar is found in *May*; and in *July*, the Fly.

The Caterpillar, previous to its change to the Chryſalis ſtate, ſpins a web of a very ſlight and delicate texture, by which it is ſuſpended horizontally againſt the branches of trees, &c. as in our Plate repreſented.


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PLATE V.

FIG. I.

MONOCULUS CONCHACEUS.

Aptera.

Without wings.

Generic Character.

Body covered with a crust or shell. Feet made for swimming.

Specific Character.

Included in a bivalve, ash-coloured shell, from the aperture of which it puts forth a number of capillary antennae, which it [illegible] out of the [illegible].

To acquire a proper knowledge of the [illegible] of this minute [illegible], it is necessary to [illegible] [illegible]

[illegible]

[illegible]

PLATE V.

FIG. I.

MONOCULUS CONCHACEUS.

APTERA.

Without wings.

GENERIC CHARACTER.

Body covered with a cruſt or ſhell. Feet made for ſwimming.

SPECIFIC CHARACTER.

Incloſed in a bivalve, aſh-coloured ſhell, from the aperture of which it puts forth a number of capillary antennæ, which it retracts when taken out of the water.

To acquire a proper knowledge of the formation of this minute inſect, it is neceſſary to uſe a microſcope with a glaſs ſtage for objects, or rather ſuch as admit of nicely adjuſting a talc as occaſion may require: the inſect to be taken from the water with a camel-hair pencil, and carefully placed on the talc; after which it may be examined by a magnifier of $\frac{1}{6}$ of an inch focus; but in proceeding to a deeper power, let the talc be turned the upper ſurface with the inſect in the drop of the fluid from the lens, and thereby the lens may approach the object to its proper focus; without this caution the lens would be frequently immerged in the water, and entirely obſtruct the ſight.

In the adult ſtate, the opacity of the bivalve ſhell, its external covering, ſo entirely obſcures the internal motion, that nothing, except the filaments it throws from the aperture or opening, is viſible by the microſcope.

It breaks from the egg perfectly formed, but very minute and tranſparent; this is therefore the beſt time to diſcover its ſtructure, and from one in this ſtate we have taken our figure.

By the antennæ it directs its courſe, as does the *Monoculus Quadricornis*; and like it alſo it hath two eyes fixed in the ſhell, but it can completely envelop its head in its bivalve covering; its mouth is beneath, but the numerous filaments it darts forth, cauſes ſuch a violent motion in the water, that the minuter inſects are unreſiſtingly drawn between them, and forced to the mouth.

The motion of its lungs is very viſible, as are alſo the veſſels ramifying thence. Its food is carried to, and digeſted in the deep-coloured tube, or inteſtine, and the refuſe is diſcharged by a ſudden jerk from the extremity of the tube, or anus.

Thus it exiſts, a life of rapine and deſtruction, enjoyed at the expence of the lives of thouſands; and as the objects of its ravenous diſpoſition are defenceleſs, ſo are they the ſport of their conqueror: the few moments of intermiſſion its craving appetite grants them, is occupied equally in the ſpoil, firſt preſſing them to death, and then toſſing them undevoured into the fluid.

But ſhould a more powerful inſect oppoſe him, he immediately contracts his parts, and nothing more than the external covering is open to his antagoniſt's violence, and he will ſooner die ignobly than offer the leaſt oppoſition.

FIG. II.

This animalcule is very minute, and appears like a fine membrane without inteſtines before the microſcope; from the appearance of its winged ſides, it is ſuppoſed to reſemble a bird. It is called *Burſariæ Hirundinella.*

FIG. III.

The back and ſide view of an animalcule found in ditch-water on duck-weed, very pellucid, and ſingularly marked in the inteſtines; tail moveable, and thereby it directs its courſe.

PLATE VI.

SPHINX FILIPENDULÆ.

Burnet Moth.

Generic Character.

[illegible] Antennæ thickest in the middle. Wings, when at rest, deflexed. Fly slow, morning and evening only.

Specific Character.

Antennæ, Legs, and Body black. Second Wings red, with a greenish border. First Wings bluish green, with six red spots, in pairs, lengthwise [illegible]. Caterpillar yellow, with black spots. Broods One.

The female has but five red spots on the upper Wing, the two being [illegible] placed so near each other as only to form one [illegible].

It feeds on the [illegible], [illegible] at the [illegible], [illegible], and on the Filipendula.

The Caterpillars of most of the moths of this genus are armed with [illegible] draws the moss, in which particular they differ. It is [illegible] the Caterpillar state in May and June, and in July the Sphinx.

PLATE VI.

SPHINX FILIPENDULÆ.

Burnet Moth.

Generic Character.

Sphinx, Antennæ thickeſt in the middle. Wings, when at reſt, deflexed. Fly ſlow, morning and evening only.

Specific Character.

Antennæ, Legs, and Body black. Second Wings red, with a greeniſh border. Firſt Wings bluiſh green, with ſix red ſpots, in pairs, length eight lines. Caterpillar yellow, with black ſpots. *Berk. Out.*

The female has but five red ſpots on the upper Wing, the two ſpots at their baſe being placed ſo near each other as only to form one large ſpot.

It feeds on the *Geniſta Anglica*, needle furze; on the *Ulex Europæus*, common furze; and on the filipendula.

The Caterpillars of moſt of the inſects of this genus are armed with a ſpine or horn above the anus, in which particular this differs. It is in the Caterpillar ſtate in *May*, and *June*, and in *July* the Sphinx.

PLATE VII.

CHRYSIS IGNITA.

HYMENOPTERA.

GENERIC CHARACTER.

[illegible]

SPECIFIC CHARACTER.

[illegible]

[illegible]

PLATE VII.

CHRYSIS IGNITA.

HYMENOPTERA.

GENERIC CHARACTER.

The abdomen hath three annulations excluſive of the anus, the antennæ hath twelve articulations, excluſive of the firſt joint which is longer than the reſt. The body ſhines like poliſhed metal. A kind of collar is very diſtinct in this *genus*. The anus is dentated, having one, two, or more teeth.

SPECIFIC CHARACTER.

The antennæ are black, the thorax a fine mazarine blue, having in ſome poſitions a greeniſh caſt, the abdomen a fine gold colour with ſhades of crimſon and yellow green; the anus hath four teeth or denticulations.—*Harris Inſ.*

Exotic Inſects, or at leaſt thoſe of the Eaſt, and Weſt Indies, for the effulgence, and beauty, of their colouring in general, claim a ſuperiority over the natives of this climate; but the appearance of this Chryſis before the ſpeculum of an opake microſcope, may vie with many of the moſt favourite foreigners hitherto diſcovered: the richneſs

of changeable colours blending into each other, according to the variations of the light reflected on the ſurface, is ſuch that we freely confeſs our inability, or even the inability of art, to equal, though we truſt our figure will give ſome idea of the delightful appearance of the original.

The Fly of the natural ſize is given on the fore ground, the magnified figure above.

It is found againſt decayed trees or walls, in the hotteſt ſun-ſhine of Summer.


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PLATE VIII.

VORTICELLA LUNARIA.

GENERIC CHARACTER.

[illegible]

SPECIFIC CHARACTER.

[illegible]

"[illegible]"

"[illegible]"

[illegible]

[illegible]

PLATE VIII.

VORTICELLA LUNARIS.

GENERIC CHARACTER.

A worm capable of contracting or extending itſelf, naked, with rotatory cilia.

SPECIFIC CHARACTER.

Simple, hemiſpherical, with a twiſted pedicle.

" The ſmall head of this animalculum is crater-form, the margin " of the orifice protuberant, ciliated on both ſides, the hairs undula- " ting, the pedicle eight or ten times the length of the body. As " often as the mouth is opened, the pedicle extends itſelf; when it is " ſhut, this is twiſted up ſpirally, and their motions are often reite- " rated in a ſhort ſpace.

" FIG. 1. the head, expanded.——FIG. 2. when ſhut.——FIG. 3. " the undulated edge."

Adams's Eſſays on the Microſcope.

FIG. 4. found in infuſions of hay; and is called *Trichoda Uvula.*

PLATE IX.

PHALÆNA EVONYMELLA.

SMALL ERMINE MOTH.

LEPIDOPTERA.

GENERIC CHARACTER.

Antennæ taper like briſtles.

SPECIFIC CHARACTER.

Firſt wings ſilver-white, with fifty ſmall black ſpots in rows. Second wings lead-colour.

Phalæna Evonymella feeds on the white-thorn, black-thorn, and on fruit-trees; in May the caterpillars are hatched, and as they live in ſocieties of hundreds, or even thouſands, by their united induſtry they ſpin a web ſpacious enough to contain the family, and therein they aſſume their ſeveral forms; early in June they become chryſalides, and in about fourteen days the Flies are perfect.

The caterpillars of the *Phal. Padella* and *Evonymella* are ever found in the ſame ſociety, and many circumſtances may be advanced

to prove them either varieties of each other, or difference of ſex only, although Linnæus conſidered them as diſtinct ſpecies. They differ in colour, the caterpillars of one being light yellow brown, the other black, and the upper wings of the *Evonymella* are leſs of a lead colour than thoſe of the *Padella*.

To gain information on this ſubject, we, this ſeaſon, put the eggs of ſeveral females into different glaſſes; the eggs of each female produced both kinds of caterpillars, they became chryſalides, and a number of each ſort of the Flies came forth.

PLATE X.

PHALÆNA CHRYSORRHŒA.

Yellow Tail Moth.

Lepidoptera.

GENERIC CHARACTER.

No trunk. Wings depreſſed, deflexed. Back ſmooth.

SPECIFIC CHARACTER.

Antennæ feathered. Entirely white, except the extremity of the abdomen, which is yellow. Caterpillar black and red, hairy.—*Berk. Out.*

Linnæus in the *Syſtema Naturæ*, has confounded the *Yellow Tail*, with the *Brown Tail*, *Moth*, nor was it generally conſidered as an error till ſome time after; but the immenſe increaſe of the caterpillars of the Brown Tail Moth in the year 1780, afforded an opportunity of determining them to be diſtinct ſpecies.

Though foreign to our purpoſe, and properly under the hiſtory of the Brown Tail Moth, we cannot paſs over ſuch remarkable circumſtances as attended the uncommon increaſe of this ſpecies in the above winter.

The

PLATE X.

The fears of the public muſt have been great indeed, when prayers were offered to avert the famine ſuppoſed to be threatened by the appearance of thoſe inſects in the ſtate of the caterpillar.

In July the Caterpillar is found feeding on the white-thorn, ſallow, apple-trees, and on fruit-trees in general, about the latter end of the ſame month it ſpins a web of a tough texture againſt the branches of trees, &c. becomes an aurelia, and in Auguſt the Fly comes forth.


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PLATE XI.

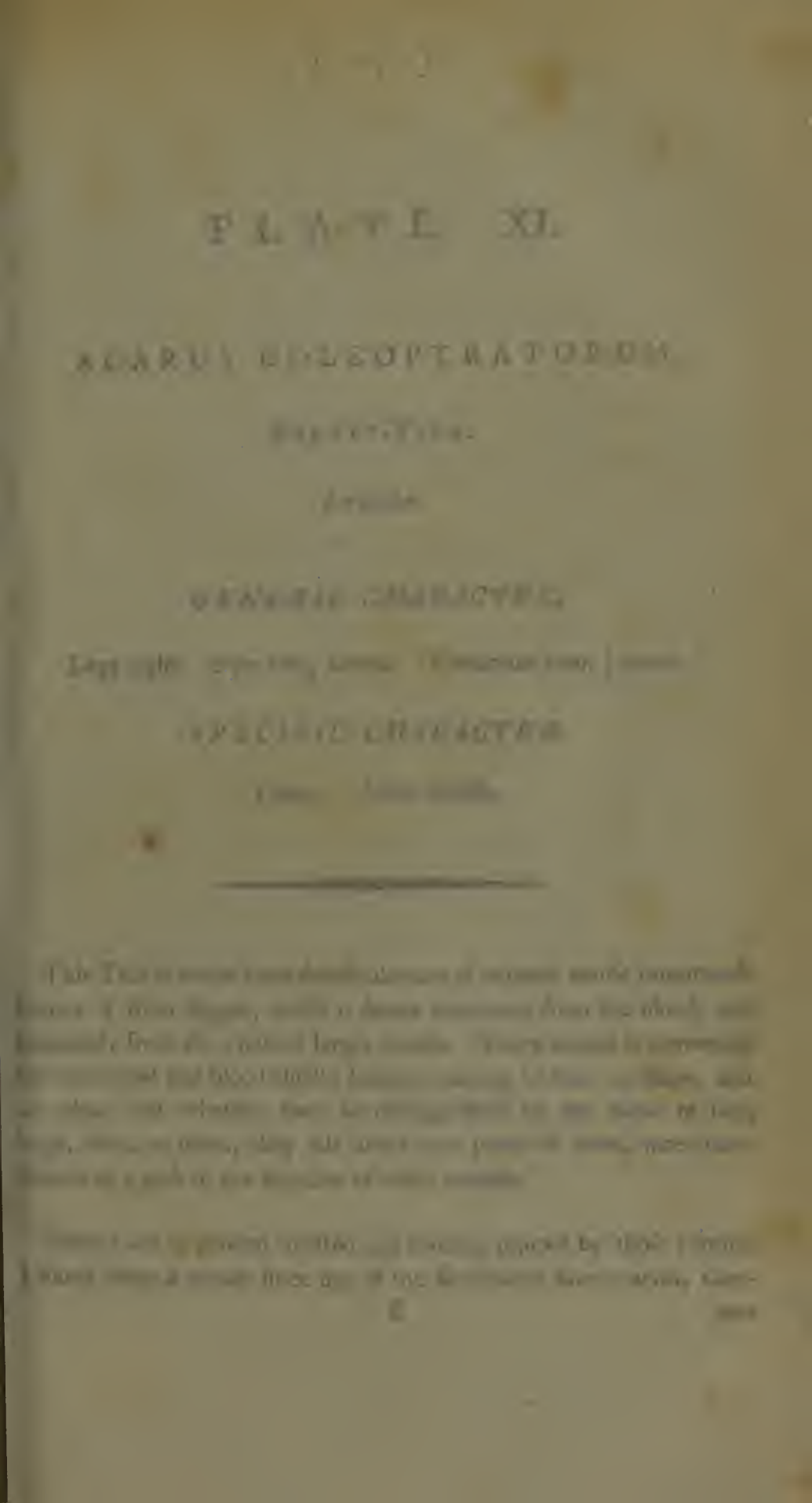

PLATE XI.

ACARUS COLEOPTRATORUM.

Beetle-Tick.

Aptera.

GENERIC CHARACTER.

Legs eight. Eyes two, lateral. Tentaculæ two, jointed.

SPECIFIC CHARACTER.

Tawny. Anus whitiſh.

This Tick is one of thoſe deteſtable race of animals whoſe minuteneſs ſecures it from danger, while it draws nutriment from the blood, and frequently from the vitals of larger inſects. Every animal is tormented by thoſe cruel and blood-thirſty beings, varying in ſize, in ſhape, and in colour, but whether they be diſtinguiſhed by the name of lice, bugs, fleas, or mites, they fall under one point of view, when conſidered as a peſt to the ſocieties of other animals.

Beetles are in general infeſted and ſeverely injured by thoſe vermin. I found about a month ſince one of the *Scarabæus Stercorarius*, *Com-*

 mon

mon Dor, or *Clock*, almoſt devoured alive by them; little except his ſhell remaining; yet, in this ſtate it lived ſeveral days. There were a number of ſmall brown bags affixed by pedicles to its breaſt, thighs, and even feet; the microſcope diſcovered thoſe to contain each an embryo, and the pedicle, no doubt, anſwered the part of an umbilical chord, to extract nouriſhment from the living creature. I perceived on further inſpection their baſe penetrated the ſhell, or entered the apertures.

FIG. 1. Natural ſize of the Tick and Embryo.

FIG. 2. The upper ſide, and FIG. 3. under ſide, magnified.

GRADUAL, from theſe what numerous kinds deſcend,
Evading even the microſcopic eye!
All Nature ſwarms with life; one wond'rous maſs
Of Animals or Atoms organized,
Waiting the vital breath, when PARENT HEAVEN
Shall bid his Spirit blow. —— —— —— ——
—— —— —— —— —— —— —— ——
—— —— —— —— Theſe, conceal'd
By the kind art of forming HEAVEN, eſcape
The groſſer eye of man: for, if the worlds
In worlds inclos'd, ſhould on his ſenſes burſt,
From cates ambroſial, and the nectar'd bowl
He would abhorrent turn; and in dead night
When ſilence ſleeps o'er all, be ſtunn'd with noiſe.

THOMSON's SEASONS.

PLATE

PLATE XII.

CICINDELA CAMPESTRIS.

COLEOPTERA.

[illegible]

GENERIC CHARACTER.

[illegible]

SPECIFIC CHARACTER.

[illegible]

[illegible]

PLATE XII.

CICINDELA CAMPESTRIS.

SPARKLER.

COLEOPTERA.

GENERIC CHARACTER.

Antennæ taper. Jaws prominent, denticulated. Eyes prominent, Thorax margined. Five joints in each foot.

SPECIFIC CHARACTER.

Above green-gold. Beneath copper tinged. Eyes large. Thorax angular and narrower than the head. Six ſpots on each ſhell. An oval ſubſtance at the baſe of each thigh. Legs long and ſlender.

This beautiful inſect varies ſomething in ſize and colour, the ſpots on the elytra are generally white, but are often found with ſpots of yellow; they fly or run quick, are carnivorous, and live in dry ſandy places. In the ſpring its larva is found, which reſembles a long, ſoft, whitiſh worm, with ſix legs and a brown ſcaly head; it perforates

the ſand, perpendicularly, and reſts near the ſurface to enſnare ſmaller inſects.

It is very difficult, if at all poſſible, to breed thoſe inſects and obſerve their metamorphoſes; we have tried various methods, but have not yet been ſo fortunate as to ſucceed.

PLATE XIII.

LUCANUS CERVUS.

STAG BEETLE.

Coleoptera.

GENERIC CHARACTER.

Antennæ clavated, compressed, pectinated [illegible]. Maxillæ [illegible] [illegible] [illegible]. [illegible] [illegible] [illegible].

SPECIFIC CHARACTER.

Head and *Thorax* black. [illegible] [illegible]. [illegible] [illegible] [illegible] of a Stag, forked at the ends, a [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. [illegible] plain.

The Stag-Beetle is the largest [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible], [illegible].

PLATE XIII.

LUCANUS CERVUS.

Stag Beetle.

Coleoptera.

GENERIC CHARACTER.

Antennæ clavated, compreſſed, pectinato-fiſſile. Maxillæ extended ſo as to reſemble horns. Five joints in each foot.

SPECIFIC CHARACTER.

Head and Thorax black. Shells dark brown. Horns reſembling thoſe of a Stag, forked at the end, a ſmall branch near the middle on the inſide, moveable. Shells plain.

The Stag-Beetle is the largeſt coleopterous inſect we poſſeſs, but its ſize is inſignificant, when compared with thoſe of the ſame kind that inhabit hot countries or woodlands, as inſtanced in the *Scarabæus Hercules*, &c.

It is ſufficiently diſtinguiſhed in this country by the moveable maxillæ, or jaws, that project from the head; they are of a dark red colour, and though brighter in ſome ſpecimens, are rarely of the beautiful coral appearance *Barbut* and other authors have deſcribed.

Coleopterous inſects in general are endowed with amazing ſtrength, and their arms are equally ſerviceable for the aſſault or defence. The antlers of this Beetle are carefully to be avoided by ſuch as attempt to deprive it of liberty; with them it ſtrips off the bark of oak trees, and attaches itſelf firmly to the trunk, thence extracting the liquor that oozes with its tongue.

They are plentiful in June and July, in Kent and Eſſex, and in many other parts of Britain.

The females are known by their maxillæ being much ſhorter than thoſe of the males; they depoſit their eggs under the bark of old trees, either oak or aſh, and the food of the larvæ, or grubs, is the internal ſubſtance of the trunk, firſt reduced to a fine powder; they undergo transformation in this cell, and force a paſſage through the bark when perfect beetles.

2

PLATE XIV.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Fig. 1. [illegible]

Fig. 2. [illegible]

PLATE XIV.

TRICHODA POCILLUM.

TRICHODA.

An inviſible, pellucid, hairy worm.

SPECIFIC CHARACTER.

Oblong trichoda, the fore-part truncated and hairy, the tail articulated, and divided into two briſtles.

This inviſible animalculum is common in marſhy places, particularly in the ſwamps near the banks of the river Thames.

When magnified, the body is pellucid, and appears as two ſeparate bodies, one encloſing the other; the interior part is filled with molecules, and the exterior is membranaceous: they are capable of extenſion or dilation, and of folding in various directions. At the extremity of the interior part is a muſcular orbicular membrane, which is opened or ſhut at pleaſure, and forms the mouth.

FIG. 1. The interior part protruded with the mouth open.

FIG. 2. The jaws ſhut.

PLATE XV.

PHALÆNA CAJA.

Great Tiger Moth.

LEPIDOPTERA.

GENERIC CHARACTER.

[illegible]

SPECIFIC CHARACTER.

[illegible]

[illegible]

[illegible]

PLATE XV.

PHALÆNA CAJA.

Great Tyger Moth.

Lepidoptera.

GENERIC CHARACTER.

Antennæ taper from the baſe. No trunk. Wings depreſſed, deflexed. Back ſmooth.

SPECIFIC CHARACTER.

Antennæ feathered. Firſt wings whitiſh, with large irregular dark brown ſpots. Abdomen and ſecond wings orange, with black ſpots.

The ſuperior wings in ſome of this ſpecies have ſmaller brown ſpots, and more of the cream colour; in others the ſpots are larger, and frequently two are united to form one. The inferior wings alſo admit of equal variety; the ſpots near the thorax are often united, and the ſmall black ſtripes on the back are fewer in the preſent ſpecimen than are common to the Moth.

The

The caterpillars feed on lettuces, or nettles. When he is apprehenfive of danger, he rolls himfelf up like a hedge-hog. He becomes a chryfalis in May; and the latter end of June, or early in July, it produces the Moth.

PLATE XVI.

PHALÆNA ANTIQUA.

Wingless Tussock Moth,

OR

VAPOURER.

[illegible]

GENERIC CHARACTER.

Antennæ taper from the base. No trunk. Wings deflexed. Body [illegible].

SPECIFIC CHARACTER.

Antennæ feathered. First wings dusky or orange, marked with brown, and a white spot on the posterior angle. Female without wings.

[illegible]

[illegible] The Female. [illegible] the Male.

The

PLATE XVI.

PHALÆNA ANTIQUA.

WHITE SPOT TUSSOCK MOTH,
OR
VAPOURER.

LEPIDOPTERA.

GENERIC CHARACTER.

Antennæ taper from the baſe. No trunk. Wings depreſſed. Back hairy.

SPECIFIC CHARACTER.

Antennæ feathered. Firſt wings cloudy, orange, waved and ſpotted with brown, and a white ſpot on the poſterior angle. Female without wings.

The female Vapourer Moth at firſt ſight perfectly reſembles an apterous inſect; but on inſpection, very ſmall wings are ſeen at the extremity of the Thorax, and the antennæ determine it to be a phalæna. It creeps in a ſluggiſh manner, and lays an abundance of eggs.

FIG. 1. the Female. FIG. 2. the Male.

The

The Caterpillars feed on white thorn, and on trees in general. It has been known to live on the deadly night-ſhade, and other poiſonous plants. The Caterpillars are found in July, and the Moth in September.


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PLATE XVII.

VORTICELLA URCEOLARIS.

GENERIC CHARACTER.

A ſmall animal, with a vaſcular cup; the mouth is at one end ciliated, and capable of being contracted; the ſtem fixed.

SPECIFIC CHARACTER.

Single, with a ſhort tail, and toothed mouth.

This Animalcum is but perceptible to the naked eye, appearing as a ſmall white ſpeck; the microſcope diſcovers the external covering to be ſo tranſparent, that all the motions of the animal within are perfectly diſtinct. It hath a double rotatory inſtrument, which, however, it can conceal or ſhew at pleaſure; and it hath power to protrude the head and tail as at FIG. 1. or to contract them within the external coat or covering, as at FIG. 2.—When the animal intends to diſplay its rotatory inſtrument, it forces its tail through the hole at the extremity of the outer coat, and affixes it to whatever ſubſtance is near; but when it ſwims, it moves its tail backwards and forwards to aſſiſt it.

They are found in river, or ſtagnant, water.

FIG. III.

TRICHODA VERMICULARIS.

GENERIC CHARACTER.

An inviſible, pellucid, hairy worm.

SPECIFIC CHARACTER.

Long cylindrical trichoda, with a ſhort neck, the apex hairy.

Is found in river water, and can aſſume various forms, as in our figure ſhewn.

PLATE XVIII.

NEPA CINEREA.

WATER SCORPION.

HEMIPTERA.

GENERIC CHARACTER.

[illegible]

SPECIFIC CHARACTER.

[illegible]

[illegible]

[illegible]

[illegible]

PLATE XVIII.

NEPA CINEREA.

Water Scorpion.

Hemiptera.

GENERIC CHARACTER.

Antennæ, or fore legs, cheliform, wings croſſed and complicated; fore part coriaceous.

SPECIFIC CHARACTER.

Black brown. Head ſmall. Antennæ cheliform. Thorax almoſt ſquare. Target large, brown. Shells large. One joint in each foot. Length near an inch. In the female the abdomen terminates in two long appendices. Four legs only.

There are three ſpecies only of this genus common to our waters, though the waters of hot countries abound with various kinds, ſome conſiderably exceeding in ſize even our *Sphinx Atropos*.

The Inſect ſinks its eggs into the cavity of a ruſh, or other aquatic plant, whence the larvæ are hatched. The perfect inſect is found in

June, and thence to September or later; they are voracious, and feed on other aquatic animals, graſping their prey between their fore feet, and tearing them to pieces with their ſharp roſtrum.—They fly in the evening, and thus remove in herds from one pool to another when danger approaches.

It is ſuppoſed by ſome authors, that the fore feet of the nepa are the antennæ, and if this be admitted, the Inſect hath only four feet; but if conſidered deſtitute of its antennæ, it hath ſix.

PLATE XIX.

CHRYSIS BIDENTATA.

HYMENOPTERA.

GENERIC CHARACTER.

Thorax joined to the abdomen by a ſhort pedicle. Abdomen divided into three ſegments. Sting ſimple. Wings not folded. Antennæ ſiliform of one long and eleven ſhort joints each.

SPECIFIC CHARACTER.

Head and laſt ſegment of the body, ſky blue, changeable. Thorax, and two firſt annulations of the abdomen, crimſon with gold ſpots. Thorax with two teeth.

The Chryſis Bidentata is ſcarcely ſo large, and by no means ſo common as the Chryſis Ignita, (not exceeding one-third of an inch in length) but is equal, if not ſuperior in beauty and richneſs of colour. The head, but more particularly the laſt ſegment of the body, appears in one direction of light, blue, in another green, in another purple, &c. and the thorax, and two firſt ſegments of the abdomen are far more enriched with a golden appearance; the ground colour is deep crimſon, but the metallic appearance on the lighter parts, and the number of ſmall gold ſpots which beſprinkle it, greatly diminiſh the ſtrength of colour, and renders it, even before it is magnified, a ſuperb little inſect.

It is found in May or June in ſome parts of Kent and Eſſex.

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PLATE XX.

FIG. I.

PHALÆNA CHRISTIERNANA.

LEPIDOPTERA.

GENERIC CHARACTER.

Pyralis.

SPECIFIC CHARACTER.

First wings yellow, with roſe-coloured marks. Under wings floſſy, browniſh grey.

The natural hiſtory of this Phalæna is ſo little known, that we freely confeſs our inability to ſhew its transformations; and although a deviation from our firſt intention, we truſt the ſcarcity of the Fly will plead our excuſe. We ſhall occaſionally introduce figures of ſome rare and non-deſcript ſubjects, which we hope will be highly ſatisfactory to many of our ſubſcribers.

Our ſpecimen was taken at Feverſham; they are ſometimes met with about Darnwood in June or July.

FIG. II.

HIMANTOPUS LUDIO.

GENERIC CHARACTER.

A pellucid, inviſible, cirrated worm.

SPECIFIC CHARACTER.

Curled Himantopus; the upper part hairy, the tail extended upwards.

PLATE XXI.

PHALÆNA PRUNARIA.

Orange Moth.

Lepidoptera.

GENERIC CHARACTER.

Geometræ. Antennæ feathered.

SPECIFIC CHARACTER.

Wings orange, ſprinkled with brown, and a ſemi-lunar ſpot on the firſt pair. Female paler than the male. Caterpillar yellow brown, with two ſpines before and two behind.

The caterpillars of this Moth feed on fruit-trees, or on thorns, in the month of May; the Chryſalis is commonly found, rolled up in a decayed leaf, inwardly protected by the web, in June; and in July the Moth.

The preſent figure is of the male.

PLATE XXI.

TIPULA PLUMOSA.

[illegible]

DIPTERA.

GENERIC CHARACTER.

[illegible]

SPECIFIC CHARACTER.

[illegible]

Is found in the month of April [illegible] frequently mistaken for the common Gnat.

PLATE XXII.

TIPULA PLUMOSA.

SEA TIPULA.

DIPTERA.

GENERIC CHARACTER.

Head long. Palpi four, curved. Trunk very ſhort.

SPECIFIC CHARACTER.

Brown. Thorax greeniſh. Eyes black. Fore legs longeſt. Wings ſhorter than the abdomen.

Is found in the month of April near marſhes, and has been frequently miſtaken for the common Gnat.

PLATE XXIII.

SILPHA VESPILLO.

COLEOPTERA.

GENERIC CHARACTER.

Antennæ clavated, foliated. Head prominent. Thorax margined.

SPECIFIC CHARACTER.

Margin of the thorax broad. Shells abbreviated, black, with two orange belts. Thigh of the hind legs large, with a ſpine near their origin; length one inch.

This ſpecies, like moſt of the Coleopterous Inſects, delights in filth and putreſcence, and are rarely found except in the dung, or dead bodies of larger animals, whoſe entrails they devour; they prey on the larvæ of ſmaller inſects beneath the ſurface of the earth, or they will deſtroy each other. Their Grubs are ſecreted in perforations made in the earth by the female, and therein they change to their laſt or perfect ſtate in June or July: thoſe Grubs are to be found by following the track of a plough.

They fly well with the tranſparent wings, which are concealed beneath the Elytra or upper Shells. The male is rather ſmaller than the female, and the orange belts are of a deeper hue: though both male and female vary in the ſtrength of colour when alive, and yet more when preſerved in cabinets, as they ſometimes become almoſt brown. All inſects are ſubject to this change, whatever may be the care of the collector.

PLATE XXIV.

LIBELLULA DEPRESSA.

DRAGON FLY.

NEUROPTERA.

Wings four, naked, tranſparent, reticulated with veins or nerves. Tail without a ſting.

GENERIC CHARACTER.

Mouth with two long lateral jaws. Antennæ very ſhort. Tail of the male forked. Wings extended.

SPECIFIC CHARACTER.

Eyes brown. Thorax greeniſh, with two yellow tranſverſe bands. A large black ſpot at the baſe of each Wing, and a ſmall dark mark on their exterior margin. Body depreſſed, lance-ſhaped.

All the ſpecies of Libellula, but particularly the larger kinds, are conſidered by many rather as objects of terror, than ſubjects worthy inſpection; and the vulgar denomination of *Horſe-ſtinger*, contributes to this abhorrence: although it hath no power over animals of ſuch magnitude, it is perfectly a Vulture among lepidopterous, or other defenceleſs Inſects, deſtroying more for its ſport than for its voracious appetite.

The Fly is on the wing in May, and June, in almoſt every marſhy ſituation; the female lays her eggs near the roots of Oſiers on the banks of ditches, or ſinks them into the ſtalks of Ruſhes in the water; they hatch, and an ugly apterous inſect, of a brown colour, comes forth;

forth; it hath a long body like the Fly, ſix Legs, and a forked Head, a ſharp ſpine at the extremity of the abdomen, and a row of ſpines on each ſide, one at every joint; it plunges into the water, and immediately devours ſuch of the inhabitants, or their eggs, as comes within its reach, and it continues this life of depredation until its next change. They are to be taken with a ſmall hand-net.

All tranſparent objects, in a certain direction before a microſcope, reflect the colours of the priſm. The *Tipula Plumoſa* exhibits, in this ſituation, an effulgence of colouring, which its natural ſize conveys but ſmall veſtiges of; and the colours on the wing of this Libellula appears far more vivid when magnified.

The body of the male is bluiſh grey; the preſent ſpecimen is the female.

PLATE XXV.

SPHINX API-FORMIS.

Bee Hornet Sphinx.

GENERIC CHARACTER.

Antennæ thickeſt in the middle. Wings, when at reſt, deflexed.

SPECIFIC CHARACTER.

Wings tranſparent, with brown veins. Abdomen yellow, the firſt and fourth diviſion from the thorax dark, purpliſh. Thorax brown, with two yellow patches in front. Head yellow. Antennæ dark brown. *Linn. Syſt. Nat.*

The Caterpillar of the *Sphinx Api-formis* is an internal feeder, and found only by making an inciſion into the innermoſt ſubſtance of the Poplar, the only tree the female commonly depoſits her Eggs on; it is to us unknown, as is alſo the time of continuing within the trunk of the tree; but in June, early in the morning, or in the evening, the Chryſalis is ſeen iſſuing through the bark, from a perforation in the trunk, which the Caterpillar had formed previous to its change, generally to the depth of ſix or eight inches, or more. Nature has furniſhed every ſegment of the Chryſalis with a double row of ſharp teeth, or ſpines, therewith it firmly attaches itſelf to the ſides of the cavity, and, by repeated exertions to break from its priſon, gradually comes forth; thus, when it hath extricated itſelf from the tree, and the Chryſalis is ſupported as in our Plate repreſented, the upper parts burſt aſunder with violence, and the inſect ruſhes forth to enjoy "the temperature of the ſummer ſeaſon." It is rarely found except in Eſſex.

There is another *Sphinx*, which differs in ſo few particulars, that it hath been miſtaken for the preſent ſubject; notwithſtanding, it may be eaſily diſtinguiſhed by a creſcent of yellow in the fore part of the thorax, and thence entitled the *Lunar Hornet Sphinx*; a Drawing of which Inſect, with the larva, has been preſented to the *Linnæan Society*. This larva is nearly the ſize of the Buff-tip Caterpillar, and of an obſcure brown colour; probably the larva of the *Sp. Api-formis* may much reſemble it.

It is arranged in many cabinets under the title of *Sphinx Veſpi-formis*; but the *Sp. Veſpiformis*, in the *Linnæan Collection*, now in the poſſeſſion of Dr. *Smith*, ſcarcely exceeds half the ſize of this ſubject, and is probably unique. The *Lunar Hornet-Sphinx* had no place in that cabinet.

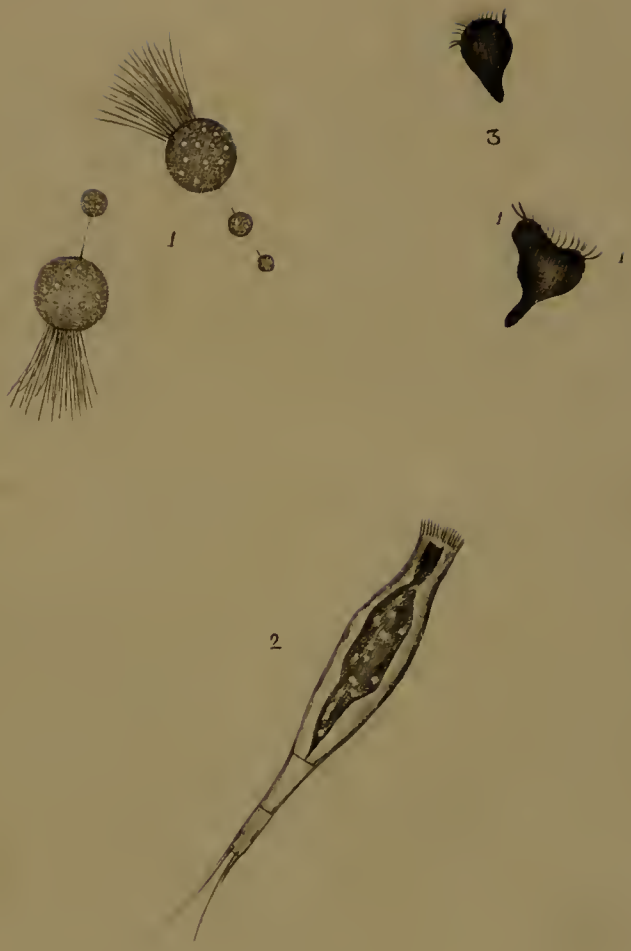
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PLATE XXVI.

FIG. I.

TRICHODA COMETA.

GENERIC CHARACTER.

An inviſible, pellucid, hairy Worm.

SPECIFIC CHARACTER.

Spherical, the fore part hairy, with an appendant globule.

FIG. II.

TRICHODA LONGICAUDA.

SPECIFIC CHARACTER.

Cylindrical, the firſt part truncated, and ſet with hairs. The tail long, with two joints, and terminated by two briſtles.

FIG. III.

VORTICELLA TROCHIFORMIS NIGRA.

GENERIC CHARACTER.

A Worm, capable of contracting or extending itſelf, naked, with rotatory cilia.

SPECIFIC CHARACTER.

Top-ſhaped black vorticella.

This ſpecies of Vorticella appears, without the aſſiſtance of a microſcope, as ſmall black ſpecks, ſwimming on the water, particularly in meadows which are inundated. They are conſtantly in motion; and two ſmall white hooks are perceptible by glaſſes at 1—1; by the help of thoſe it is ſuppoſed to ſwim, or they may incloſe ſome rotatory organ. The inſect is opaque.

PLATE XXVII.

LEPTURA ARIETIS.

Common Wasp Beetle.

Coleoptera.

GENERIC CHARACTER.

Antennæ tapering to the end. Shells narrower at the apex. Thorax ſomewhat cylindrical.

SPECIFIC CHARACTER.

Black. Anterior and poſterior margin of the Corſlet yellow. Four yellow lines on each elytra or Shell. *Lin. Syſt. Nat.*

They fly well, and are ſometimes found on aquatic plants. They are exceedingly numerous in Kent, in the peaſe and bean-fields, in May, or on the currant-buſhes, and not unfrequently are taken on the fern.

PLATE XXVIII.

CHRYSOMELA ASPARAGI.

COLEOPTERA.

GENERIC CHARACTER.

Antennæ knotted, enlarging towards the ends. Corſlet margined, and body oblong. Thorax narrow.

SPECIFIC CHARACTER.

Head, Antennæ, and under ſide of the Body black. Thorax red, with two black ſpots. Shells dark green, with ſix yellow ſpots. Length one line. *Lin. Syſt. Nat.*

This pretty Coleopterous Inſect is found in June on the Aſparagus, when in ſeed. Linnæus calls it *Aſparagi*, from the larvæ feeding on the leaves of that plant. It is a common inſect, but forms a beautiful opaque object for the microſcope. The natural ſize is given at Fig. I. and the magnified appearance above.


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[illegible]

PLATE [illegible]

FIG. 1.

TRICHODA [illegible]

GENERIC CHARACTER.

[illegible]

SPECIFIC CHARACTER.

[illegible]

[illegible]

FIG. 2.

VORTICELLA [illegible]

GENERIC CHARACTER.

[illegible]

SPECIFIC CHARACTER.

[illegible]

[illegible]

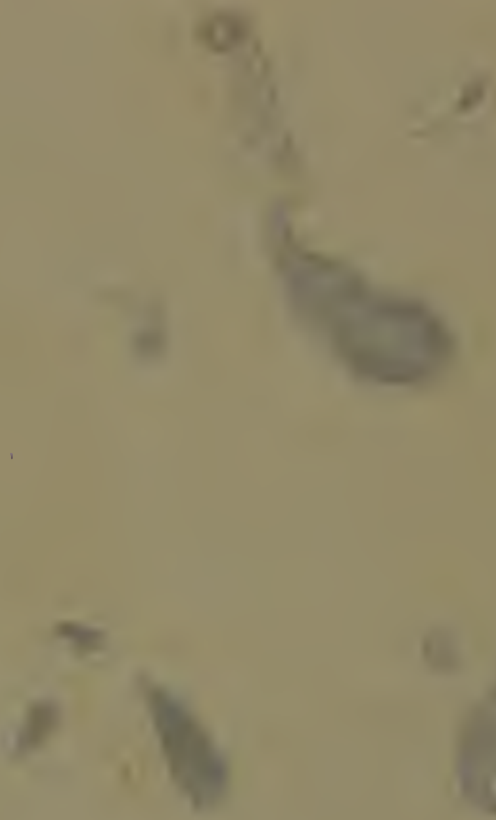

PLATE XXIX.

FIG. I.

TRICHODA MELITEA.

GENERIC CHARACTER.

An inviſible, pellucid, hairy Worm.

SPECIFIC CHARACTER.

Oblong ciliated trichoda, with a dilatable neck, the apex globular, and ſurrounded with hairs. *Müller's Animalcula Infuſoria*, &c.

Inviſible to the naked eye, and rarely found except in ſalt-waters, although we have met with one ſpecimen in the water of the Thames.

FIG. II.

VORTICELLA NASUTA.

GENERIC CHARACTER.

A Worm, capable of contracting or extending itſelf, naked, with rotatory cilia.

SPECIFIC CHARACTER.

Cylindrical, with a prominent point in the middle of the cup. *Müller's Anim. Infuſ.*

Is inviſible to the naked eye, and appears of an unequal ſize before the microſcope is pellucid, with the fore part truncated and ciliated, and moves in the water with great alertneſs, by the aſſiſtance of the circle of hairs which encompaſs the body.

FIG. III.

VORTICELLA VIRIDIS.

GENERIC CHARACTER.

A worm capable of contracting or extending itſelf, naked, with rotatory cilia.

SPECIFIC CHARACTER.

Cylindrical uniform, green, and opake. *Müller's Anim. Infuſ.*

The naked eye diſcovers this ſpecies as a mere point: when magnified it is of a dark green colour, almoſt opake, nearly cylindrical, obtuſe at the extremities, and deſtitute of limbs. It moves circularly, or in a ſtrait direction, and cauſes ſuch an agitation of the water, that notwithſtanding its appearance, ſome rotatory inſtrument muſt be concealed within the body, which the inſect can put forth at pleaſure.

PLATE XXX.

PHALÆNA SALICIS.

White Sattin Moth.

GENERIC CHARACTER.

** No trunk, wings depreſſed, deflexed, back ſmooth.

SPECIFIC CHARACTER.

Antennæ feathered. Body and wings white.
Caterpillar black, with red and white ſpots.

Are very numerous in the adjacent parts of London, and are found in the ſtate of Caterpillar, Chryſalis and Moth, at the ſame time, though commonly the Caterpillar changes to Chryſalis in June, and to a Fly in July.

It feeds on the Willow, the Ozier, the Poplar, &c.


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PLATE XXXI.

FIG. I.

MUSCA CHAMÆLEON.

DIPTERA.

Two Wings.

GENERIC CHARACTER.

Muſca, a ſoft flexible Trunk with lateral Lips at the end. No palpi.

SPECIFIC CHARACTER.

Dark brown or black. Antennæ taper, broken. Eyes large. Abdomen nearly circular, with three triangular yellow ſpots on each Side, and one at the extremity.

Linnæus, in a former edition of the *Fauna Suecica* gave this inſect the name of *Oeſtrus Aquæ*, but he afterwards diſcovered it to be a Muſca, and called it Muſca Chamæleon. It is one of the moſt common Dipterous, or two-winged Inſects we have; yet though ſo well known in its perfect ſtate, few have attended ſo minutely to its changes as to diſcover that; they form the moſt ſingular part of its hiſtory.—The female depoſits her eggs in the hollow ſtalks of aquatic plants, or broken reeds, or ſo provides for them that they cannot, but by ſome unforeſeen accident, be carried away. The egg, in due time ripening, produces a Larva, no way reſembling the Parent, but rather a Worm

of a moſt ſingular ſtructure. This happens about the latter end of *May*, or beginning of *June*, if the weather proves favourable; they will then be found in ſhallow ſtanding waters, crawling on the graſs or plants which grow there, or they may be taken floating on the ſurface of the water. The Body conſiſts of twelve annular diviſions, whereof the Head and Tail are two; the Tail has a verge of hairs, which, when entirely expanded, ſupport the creature on the ſurface, with its head downwards. If it wiſhes to deſcend, it contracts the hairs in the form of a wine glaſs, or entirely cloſes them at the end; and when again it is riſing to the ſurface, it forces a bubble from a ſmall aperture in the center, which immediately makes a paſſage for its aſcenſion.— It changes to the Pupa ſtate, and about the middle of *July* to the Fly. It ſubſiſts at this time on the nectar and other juices it extracts from the bottom of the corolla in flowers.

FIG.

FIG. II.

MUSCA PENDULA.

DIPTERA.

MUSCA.

SPECIFIC CHARACTER.

Head black. Thorax yellow, with three longitudinal black lines. Abdomen yellow, with tranſverſe black marks.

Its habits nearly correſpond with thoſe of the *Muſca Chamæleon.* Like that Inſect it once wore the appearance of an Aquatic, and like it alſo in its laſt or perfect ſtate, exiſts by extracting with its Trunk the nectar from flowers. It is to be taken in *June.*

FIG. III.

MUSCA LATERALIS.

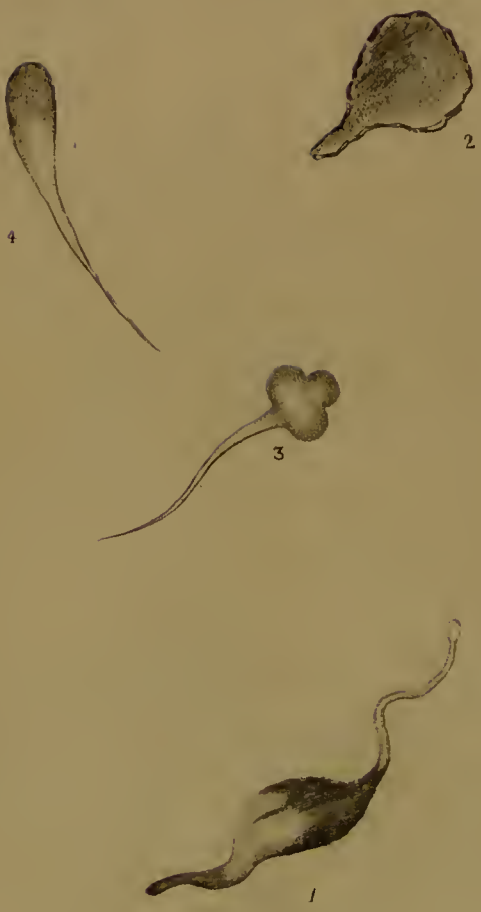
DIPTERA.

MUSCA.

SPECIFIC CHARACTER.

* Thorax black. Abdomen bright red or brown, with a line of black from the Thorax; the laſt ſegment black, with hairs or ſpines.

Viſits flower gardens in the month of *June.*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4
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PLATE XXXII.

FIG. I.

VIBRIO [illegible]

GENERIC CHARACTER.

[illegible]

SPECIFIC CHARACTER.

[illegible]

[illegible]

FIG. II.

KOLPODA [illegible]

GENERIC CHARACTER.

[illegible]

SPECIFIC CHARACTER.

[illegible]

[illegible]

PLATE XXXII.

FIG. I.

VIBRIO OLOR.

GENERIC CHARACTER.

An invisible Worm, very simple, round, and rather long.

SPECIFIC CHARACTER.

Elliptical, with a very long Neck, and a knob on the Apex.—*Müller's Ani. Inf.*

The Neck of this Creature is in continual motion, and the whole Body is dilatable. It is found in water, replete with decayed vegetables.

FIG. II.

KOLPODA MILEAGRIS.

GENERIC CHARACTER.

An invisible, very simple, pellucid, flat, crooked Worm.

SPECIFIC CHARACTER.

Changeable, with the fore part like a hook, the hind part folded up.——*Müller' Ani. Inf.*

FIG.

FIG. III. and FIG. IV.

PROTEUS TENAX.

GENERIC CHARACTER.

An inviſible, very ſimple, pellucid Worm, of a variable form.

SPECIFIC CHARACTER.

Running out into a fine point.—*Müller.*

A gelatinous pellucid body, ſtored with black molecules; it changes its form in a regular order, firſt extending itſelf out in a ſtrait line, the lower part terminating in an acute bright point, without any inteſtines, and the globules being all collected in the upper part, it next draws the pointed end up towards the middle of the body, ſwelling it into a round form. The contraction goes on for ſome time, after which the lower part is ſwelled as in Fig. IV. The point is afterwards projected from this ventricoſe part. It paſſes through five different forms before it arrives at that repreſented at Fig. IV. It ſcarcely moves from one ſpot, only bending about ſideways. It is to be found in river water, where the *Nitida* grows.—*Adams on the Microſcope.*

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PLATE XXXIII.

PLATE XXXIII.

FIG. I.

PHALÆNA BATIS.

PEACH-BLOSSOM MOTH.

LEPIDOPTERA.

PHALÆNA.

GENERIC CHARACTER.

Antennæ taper from their apex. Wings in general contracted when at reſt. Fly by night.

*NOCTUA.

SPECIFIC CHARACTER.

Firſt pair of Wings brown, with five peach-coloured ſpots on each. Second pair light brown.

The Peach-bloſſom Moth at firſt ſight ſo evidently diſtinguiſhes itſelf, that it can ſcarcely be miſtaken. The upper or firſt pair of Wings have the ground of a brown colour, which in ſome directions of light aſſume a golden appearance; and on each Wing are five elegantly diſpoſed ſpots of white, having each a center of the moſt beautiful bloom, or bloſſom colour, which blend into the white with the moſt exquiſite ſoftneſs. The under Wings are of a ſimple colour, and have only a tranſverſe ſhade of a darker hue acroſs the middle of each Wing.

Its truly elegant appearance would alone be ſufficient to claim our attention; but when we add that it is one of the rareſt and moſt

valuable ſpecimens of Britiſh entomology, it will be conſidered as a compenſation for thoſe more common ſubjects occaſionally introduced; and which the nature of our plan cannot permit us to refuſe.

Our endeavours to procure the Caterpillar have hitherto been ineffectual, although it is very probably to be taken early in the ſeaſon, feeding on the bramble. It is deſcribed to be a brown larva, naked, or without hairs, with a gibboſity or riſing on the back, near the extremity.

Our Fly was taken in Eſſex, July 14th.

FIG. II.

PHALÆNA AMATORIO.

BLOOD VEIN, or BUFF ARGOS MOTH.

LEPIDOPTERA.

PHALÆNA.

** Antennæ feathered.

SPECIFIC CHARACTER.

Wings angulated, buff, ſprinkled with brown, and a red tranſverſe line acroſs each. Margin of each Wing edged with red.

The Caterpillars of this Phalæna feed on the oak leaves. They are green, with yellow rings. The Fly is found in Eſſex very commonly in the month of July.


1
2

PLATE XL[illegible]

FIG. I.

CURCULIO BACCHUS.

COLEOPTERA.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

PLATE XXXIV.

FIG. I.

CURCULIO BACHUS.

COLEOPTERA.

Wings two, covered by two ſhells, divided by a longitudinal ſuture.

GENERIC CHARACTER.

Antennæ clavated, elbowed in the middle, and fixed in the Snout, which is prominent and horny. Joints four to each foot.

SPECIFIC CHARACTER.

Shells, and Thorax purple with gold ſhades; ſnout long, black. *Linn. Syſt. Nat.* 2. 611. 38. *Sckæff. Icon. Tab.* 37. *Fig.* 13. *Geoff. Inſ.* 1. 270. 4. *Sul. Hiſt. Inſ. Tab.* 4. *Fig.* 4.

Our figure repreſents the *Curculio Bachus*, as it appears before the Speculum of an Opake *Microſcope with a lens magnifying* 4 times.

It is with this, as with many other ſpecies of inſects, and particularly thoſe of the Coleopterous Order, that unleſs they are in ſome meaſure magnified, much of their beauty will remain hidden, and much of their ſtructure be enveloped in obſcurity. It is not perfectly agreeable to our plan, and may admit of ſome blame from our ſubſcribers; but when objects ſo diminutive in ſize, and ſo complex in colour, offer to our attention, and it is not poſſible to repreſent them in their natural appearance, or in a manner ſatisfactory to ourſelves, we muſt have recourſe to the Microſcope for aſſiſtance. We conſider the confidence at preſent repoſed in our accuracy, and attention, to the natural ſubjects, evident from the general patronage beſtowed on our attempt; it is a ſpur to our exertions, and we will endeavour, as well by our future, as preſent correctneſs, to deſerve a continuation of

that eſteem, and encouragement, ſo liberally ſhowered on our once arduous undertaking.

C. Bachus is near *four Lines* in length, the Shells and Thorax appear of a deep gloſſy purple, with much inclination to gold; a green and golden hue is ſeen on every part of the body as it moves in various directions of light. The whole appears before the microſcope beſprinkled, and ſpotted with gold and purple; gold in thoſe parts where the light is moſt powerful, and purple in the ſhadows. The Snout is black, or of a dark colour, as are alſo the Eyes; and the ſingular ſtructure of the jointed Antennæ, which are thereon, deſerve particular notice. This beautiful inſect is as rare, as it is ſuperb, and the larva is ſcarcely, if at all known.—Our ſpecimen was taken in the middle of *June*, in a field near Kent.

FIG. II.

CURCULIO GERMANUS.

BLACK CURCULIO.

COLEOPTERA.

Curculio.

SPECIFIC CHARACTER.

Snout long, black Head, Thorax, Shells and Body black. Two ſmall ſpots of yellowiſh white on the ſides of the Thorax.

Linn. Syſt. Nat. 2. 613. 58. *Scopol. Ann. Hiſt. Nat.* 5. 91. 44. *Friſch. Inſ.* 13. 28. Tab. 26.

An Inſect found in abundance in Germany, and by no means uncommon in this and every other part of Europe. It is generally taken in *June*.


2
1

PLATE XXXVI.

FIG. I

FIG. II

PLATE XXXV.

FIG. I.

Shews the natural ſize of the larva, of the

MUSCA CHAMÆLEON,

Deſcribed in Plate XXXI of this work.

FIG. II.

As it appears magnified. We have taken it ſince that plate was finiſhed, or we would have introduced it with the Fly. Being unacquainted with any perfect repreſentation of this aquatic larva, we are happy to give it before the completion of the firſt volume.

PLATE XXXVI.

FIG. I.

LIBELLULA ~~PUELLA~~ VIRGO

NEUROPTERA.

Wings four, naked, tranſparent, reticulated. With Veins or Nerves. Tail without a ſting.

GENERIC CHARACTER.

Mouth with two long lateral Jaws. Antennæ very ſhort, tail of the male forked. Wings extended.

SPECIFIC CHARACTER.

Body Saxon-greeniſh blue, Eyes diſtant, remote. Wings of equal length, with a cloud of brown in the middle, and without marginal ſpot. Length two inches.

Linn. Syſt. Nat. 2. 904. 20. *Fan. Sv.* 1470.

It is neither ſo large as to infuſe terror by its appearance, or ſo beautiful as to claim the firſt place in a collection of Britiſh inſects: notwithſtanding there are many inferior to it both in elegance, and colour. The whole of the body is a deep purpliſh blue, which reflects on one part, a moſt brilliant colour with a greeniſh caſt, and the clouds on the wings contribute much to its luſtre. The Thorax and Head are nearly the ſame, ſome few ſhades of green excepted.

It

It is found in *May* and *June*, ſporting on the waters, or among the buſhes which overgrow the ſides of pools, or gently flowing ſtreams; at noon, or after a ſhower, when the ſun breaks from its watery priſon, and penetrates the thickets, and the groves with inviting warmth, they are ſeen iſſuing from the dark retreat, and overhanging ſhrubbery; to baſk and wanton in its effulgent beams, and fan the gently riſing breeze with their lucid Wings. In many parts on the banks of the *Thames* they heighten the ſcene by the glow and richneſs of their colouring; the green, the blue, and the red; the yellow, purple, and the brown, in their richeſt teints, according to the ſpecies; and as they fly in various directions, diſplay themſelves in all their native elegance and ſplendor.

FIG. II.

LIBELLULA PUELLA.

NEUROPTERA.

LIBELLULA.

SPECIFIC CHARACTER.

Body red with yellow and black lines at each ſegment; thorax green with yellow ſtripes. Wings clear, with marginal ſpots.

The body is red, with a yellow band and black mark at every ſegment; the Thorax green, with longitudinal lines of yellow; the Wings are perfectly tranſparent, except a marginal ſpot on each. It is voracious, as are all the ſpecies of Libellula, whether in the larva or the winged ſtate; it appears about the ſame time as the preceding, and is the produce of an aquatic larva.

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TO

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HEMIPTERA.

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Third Order.

Phalæna

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APTERA.

Seventh Order.

INDEX.

SPECIFIC NAMES,

ALPHABETICALLY ARRANGED,

TO

VOL. I.

Lucanus,

INDEX.

ERRATA to VOL. I.

PLATE XXXIV. for *magnifying times*, read *magnifying four times*
for 6. *Bachus is near in length*, read *C. Bachus is near four Lines in length*
FIG. II. for *Cuculio*, read *Curculio*